al.). More specifically, Li et al decrease etch selectivity between doped/deposited oxide and thermal/native oxide by adding an etch reducing agent such as ammonium compounds ($(R)_4NOH$ ). In sharp contrast, the claimed invention provides an etching solution in which a ratio of an etch rate of a boron silicate glass film (BSG) or boron phosphosilicate glass to an etch rate of a thermal oxide film (THOX) at 25°C is 10 or higher. Therefore, Li et al and the present invention are completely different, and indeed, Li et al. teaches away from the present invention by virtue of the low etch selectivity ratio.

Even further, with regard to the ratio of etch rate, according to comparative examples 1-3 of the invention (see table on page 13 of the specification), BSG/THOX etch rate selectivity values of HF (1%, 2% and 3%) are 6.5, 6.3 and 6.6, respectively. According to the invention, etch rate ratio "10" corresponds to about 1.5 (=10÷6.5) times as much as the etch rate ratio of HF (1-3%). In contrast, the etching solution of example 1 of Li et al., i.e., 0.49% HF aqueous solution, has an etch rate selectivity of 10.5 (=378/36, see, column 6 lines 56-59, column 7 lines 5-6 and column 7, table 1). The selectivity "10.5" in Li et al will thus correspond to "about 6.5" in the present invention. This difference in etch rate ratio may be derived from the difference in how to make BSG or BPSG film. In the examples and comparative examples of the invention, annealed BSG and BPSG is used, although anneal treatment is not disclosed in the specification. Annealed BSG or BPSG is slower in etching rate. The BPSG used in example 1 of Li et al will not be annealed, thus resulting in higher etching rate and higher selectivity.

If the same experimental conditions, in particular, the same BSG, BPSG and THOX films are used, the etching solution of Li et al will not have the BSG or BPSG/THOX etch rate selectivity of 10 or higher at 25°C.

Accordingly, the present invention as embodied in claims 1, 15 and 16 are clearly novel and unobvious over the Li et al. reference, and the Examiner's rejection on the basis of this reference is respectfully traversed.

In the Official Action, the Examiner rejected Claims 2 and 3 under 35 U.S.C. §103(a) as unpatentable over the Li patent as applied to Claim 1 in view of Grant US patent 5,439,553. This rejection is respectfully traversed for the reasons as stated below.

In the first place, the presently claimed invention is diametrically different that the disclosure of the Li patent for the reasons as stated above. Moreover, the deficiencies of the Li patent are not overcome by combining this reference with the Grant patent cited by the Examiner. In fact, the cited Grant patent discloses an invention characterized by combination of gas phase and controlled liquid phase reactions in which organic gas and halide-containing species (for example, HF gas). Again, in sharp contrast, the present invention is directed to a liquid phase reaction, not a gas phase reaction. Accordingly, the etching solution of the present invention which prepared by combining HF and low dielectric constant solvent cannot be completed by combining Li et al. and Grant et al., and thus the Examiner's rejection on the basis of the combination of these references is respectfully traversed and should be withdrawn.

In the Official Action, the Examiner rejected Claims 4-10 under 35 U.S.C. §103(a) as unpatentable over the Li patent in view of Grant and the Bertens US patent 3,968,565. This rejection is respectfully traversed for the reasons as stated below.

Contrary to the Examiner's view, Bertens et al do not disclose or suggest the present invention and thus cannot be combined with the Li and Grant patents to anticipate or make obvious the claimed invention. To the contrary, Bertens et al. simply disclose that chemical etching rate varies strongly with the composition, as pointed out by the Examiner. However, Bertens et al do not disclose or suggest how to prepare such a composition having specific etch rate selectivity. Accordingly, Bertens cannot be combined with the earlier cited references to make the present invention obvious, and the Examiner's rejection on the basis of these references is respectfully traversed.

In the Official Action, the Examiner rejected Claims 11-13 under 35 U.S.C. §103(a) as unpatentable over the Li patent in view of the McNeilly US patent 5,294,568. This rejection is respectfully traversed for the reasons as stated below.

Contrary to the Examiner's view, the McNeilly patent does not overcome the deficiencies of the Li reference as discussed above and thus cannot be combined with Li to make obvious the present claims. To the contrary, McNeilly et al at most discloses how to remove native oxide without removing other oxide such as THOX, BSG, BPSG, and thus does not disclose or suggest the claimed invention at all. Since McNeilly et al do not disclose the invention at all, it will be impossible to complete the invention by combining Li et al and McNeilly et al. Accordingly, the Examiner's rejection on the basis of the combination of these references is respectfully traversed and should be withdrawn.

Finally, in the Official Action, the Examiner rejected Claim 14 under 35 U.S.C. §103(a) as unpatentable over the Li patent in view of the Wanlass US patent 3,997,381. Applicants submit that the invention is not disclosed or suggested by the Li patent for

reasons as stated above, and that the Wanlass patent which relates only to an unrelated etching solution cannot be added to Li in order to make the present invention obvious. Accordingly, the Examiner's rejection on the basis of the combination of these references is respectfully traversed and should be withdrawn.

In short, as shown above, none of the references cited by the Examiner disclose or suggest, either singly or in combination, an etching solution with specific ratio and etching rate as claimed in the present application, and thus cannot be used to anticipate or make obvious the present claims.

Accordingly, Applicants respectfully submit that the present application is patentable over the cited references and in condition for immediate allowance, and such action is earnestly solicited.

Respectfully submitted,

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B. Aaron Schulman
Registration No. 31,877

LARSON & TAYLOR PLC
Transpotomac Plaza
1199 North Fairfax Street, Suite 900
Alexandria, Virginia 22314
(703) 739-4900